



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB2001-0290-FEC

February 15, 2002

Mr. Lawrence C. Evans
Chief, Regulatory Branch
US Corps of Engineers, Portland District
P.O. Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act
Essential Fish Habitat Consultation for the Horning Scour Remediation Project,
Willamette River, Benton County, Oregon

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) that addresses proposed repairs to a scoured revetment on the Horning Property, located in Benton County, Oregon. The NMFS concludes in this Opinion that the proposed action is not likely to jeopardize the subject species, or destroy or adversely modify critical habitat. This Opinion includes reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are necessary and appropriate to minimize the potential for incidental take associated with this project.

In addition, this document also serves as consultation on essential fish habitat (EFH) under Public Law 104-267, the Sustainable Fisheries Act of 1996, as it amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Stevens Act). An EFH analysis is required for chinook salmon (*Oncorhynchus tshawytscha*). Questions regarding this letter should be directed to Pat Oman of my staff in the Oregon Habitat Branch Office at (503) 231-2313.

Sincerely,

f.1 Michael R Couse

D. Robert Lohn
Regional Administrator

cc: Mary King - Sam Daws District Improvement Company
Vivienne Torgeson - OWEB
Rolland White - USFWS



Endangered Species Act Section 7 Consultation
&
Magnuson - Stevens Act
Essential Fish Habitat Consultation


BIOLOGICAL OPINION

**Horning Scour Remediation Project
Willamette River
Benton County, Oregon**

Agency: U.S. Corps of Engineers

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: February 15, 2002

Issued by: *for* 
D. Robert Lohn
Regional Administrator

Refer to: OSB2001-0290-FEC

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1. ENDANGERED SPECIES ACT

1.1 Background

On December 11, 2001, the National Marine Fisheries Service received a request from the US Army Corps of Engineers (USACE) for Endangered Species Act (ESA) section 7 formal consultation on issuance of a permit for the Horning Scour Repair Project. This proposed project involves the construction of a 40-ft long barb, of rocks and large woody material, upstream of an existing revetment. This will repair a large scour hole that is threatening the integrity of the revetment. The top of the barb structure will be at, or below, the ordinary high water mark (OHM). It will be keyed into the bank to ensure stability.

The project applicant is the Sam Daws District Improvement Company and the Oregon Watershed Enhancement Board (OWEB), and the lead Federal agency is the USACE because of the need for a fill permit. The project is located upstream of the town of Peoria, and downstream of the town of Harrisburg. The applicants propose to place approximately 400 cubic yards of fill, composed primarily of clean rock and large woody material (LWM), upstream of an existing scour in the Trenholm revetment.

The USACE determined that the proposed action is likely to adversely affect the Upper Willamette River (UWR) chinook salmon and UWR steelhead which are present in the project area. The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996).

This biological opinion (Opinion) is based on the information presented in the original biological assessment (BA) and developed during the consultation process. The consultation process includes electronic correspondence and phone communications, several field visits, and meetings between the interested parties and NMFS staff to obtain additional information and clarify the BA.

The objective of this Opinion is to determine whether the action to stabilize the stream bank and place riprap is likely to jeopardize the continued existence of the UWR chinook salmon and UWR steelhead, or destroy or adversely modify critical habitat.

1.2 Proposed Action

The project is located just downstream of the confluence of the Long Tom River with the Willamette River. The Trenholm revetment is a USACE revetment that runs along the left side (looking downstream) of the bank. It is the southernmost edge of the revetment that is now threatened by the development of a scour hole. The proposed action will place an estimated 400 cubic yards of riprap and LWM at a site in the Willamette River at the project location described above. This will create a barb (also called a groin, or jetty) that will be about 17-ft wide, and extend out from the bank about 40-ft into the river. It will be keyed into the bank for stability,

and will be built to retain the natural configuration of the bank at this location. The bulk of the structure will be underwater most of the year. This action will take place within the ordinary high water line of the river. Large woody material will be incorporated in the barb to create resting and rearing habitat for fish. The portion of the bank that is disturbed during construction will be revegetated to restore riparian function. The work is expected to take no longer than two weeks.

The disturbed habitat is within the critical habitat for UWR chinook salmon and UWR steelhead. The scour remediation will prevent the revetment from requiring more invasive repairs, as the barb will direct flowing water away from the existing area of damage.

1.3 Biological Information and Critical Habitat

Within the Willamette River basin, the National Marine Fisheries Service (NMFS) has listed the UWR steelhead and UWR chinook salmon as threatened under the Endangered Species Act (ESA). The UWR steelhead evolutionarily significant unit (ESU) was listed on March 25, 1999 (64 FR 14517) and UWR chinook salmon ESU was listed on March 24, 1999 (64 CFR 14308). Protective regulations for these species were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Critical habitat was designated for UWR chinook salmon and UWR steelhead on February 16, 2000 (65 FR 7764). This designation of critical habitat includes all waterways below naturally-impassable barriers including the project area. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient/chemical regulation, streambank stability, and input of large woody debris/organic matter.

Biological information on UWR chinook salmon may be found in the *Status Review of Chinook Salmon from Washington, Idaho, Oregon, and California* (Myers et al. 1998), and information on UWR steelhead is in NMFS' status reviews for west coast steelhead in Busby et al (1995, 1996).

1.4 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species or destroy or adversely modify critical habitat. This analysis involves the: (1) Definition of the biological requirements and current status of the listed species, and (2) evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and

recovery specific to the listed salmonid's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize the listed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent alternatives available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, and juvenile rearing of the UWR chinook salmon and UWR steelhead.

1.4.1 Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list UWR chinook salmon and UWR steelhead for ESA protection and also considers new data available that is relevant to the determination (Myers et al, 1998, and Busby et al 1995, 1996).

The relevant biological requirements are those necessary for UWR chinook salmon and UWR steelhead to survive and recover to naturally-reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration, spawning, holding, and rearing. The current status of the UWR chinook salmon and UWR steelhead, based upon their risk of extinction, has not significantly improved since the species was listed.

Production of wild UWR chinook salmon occurs primarily in three major tributaries to the Willamette: the North Santiam River, the Clackamas River, and the McKenzie River. The confluence of the Clackamas and the Willamette is well downstream of the project area, so UWR chinook salmon produced in the Clackamas River generally would not migrate or rear in the area to be impacted. The confluence of the North Santiam River with the Willamette River is also

downstream of the project area about 20 miles, so while there might be some straying by returning adults, this segment of the ESU would also not be affected by the project. The McKenzie River chinook salmon and steelhead populations use the project area as a migratory corridor.

Of the three primary areas of natural UWR chinook salmon production, the McKenzie River chinook salmon are the most robust. However, adult returns to the McKenzie River have declined from highs of 10,000 - 13,000 during 1988 to 1991, to recent lower levels of 3,000 - 4,000 from 1994 to 1998. These levels are less than what would be required to fully seed the available habitat (Oregon Department of Fish and Wildlife: January, 1999 stock status report at www.dfw.state.or.us/springfield/McKChs.htm). They are also considerably lower than the historic abundance of systems like the Clackamas River, from which an estimated 12,000 spring chinook were harvested in 1893.

UWR steelhead are a distinct population from steelhead below the Willamette Falls. According to StreamNet, the five year moving average has gone from 12,554 steelhead in 1964 to 3,313 in 1999 (PSMFC 2001). A recent steelhead status report done by ODFW (Chilcote, 2001) has summarized the status of a number of populations throughout the state:

In the early 1990s, most populations entered a period of decline. For populations in the lower Columbia and upper Willamette ESUs, this decline appears to have been a feature that started prior to 1990. However, the record for the majority of other populations in Oregon, provides evidence that this decline may be part of a normal cyclic pattern. Rather than a chronic, long-term decline, as appears the case for the Willamette and lower Columbia populations, the pattern observed for most other populations suggests a long-term cyclic phenomena. Indeed, in the last 5 years several populations appear to be entering the ascending portion of this cycle.

The greatest concentration of vulnerable populations appeared to be those that belonged to the mid-Columbia ESU. Two populations, the Deschutes and Umatilla, met the criteria for an endangered classification. A majority of the populations in this ESU are at abundance levels that are less than 50% of maximum seeding. Nearly equal, in terms of vulnerability, were the Upper Willamette populations. Only did [sic] 2 out of 5 of these populations were at levels of escapement greater than necessary for 50% of maximum seeding. In addition, one population, the North Santiam, met the criteria for a threatened classification. Although, the PVA [population viability analysis] analysis did not suggest that the two populations representing the lower Columbia ESU, the Sandy and Clackamas, were at risk of extinction, these populations show other troubling signs. Both exhibit a chronic downward trend in abundance with little indication an underlying cyclic pattern exists that might reverse this trend. In addition, within the last 6 years, both populations have experienced at least one escapement of wild fish that was less than the viable threshold. Therefore, these populations may be more vulnerable than the PVA analysis seems to suggest.

1.4.2 Environmental Baseline

The current range-wide status of the identified ESUs may be found in Myers et al. (1998) and Busby et al. (1995, 1996). The identified action will occur within the range of UWR chinook salmon and UWR steelhead. The defined action area is the area that is directly and indirectly affected by the action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, and for generating sediment and pollutants. Indirect affects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities include the immediate watershed where the barb will be constructed, and those areas upstream and downstream that may reasonably be affected temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of the Willamette River extending upstream to the edge of disturbance, and extending downstream 100 feet. Other areas of the Willamette River watershed are not expected to be directly or indirectly impacted. UWR chinook and UWR steelhead are found throughout the Willamette River basin. The project area is primarily migratory habitat for adult and juvenile steelhead and chinook salmon; spawning and rearing takes place in tributaries or in off-channel habitat.

The Oregon Department of Environmental Quality is required by the Federal Clean Water Act (CWA) to assess water quality throughout the state and to maintain a list of steam segments that do not meet water quality standards. These streams are water-quality limited, and the list is called the 303(d) list because of the section of the Clean Water Act that requires the list be maintained. The last time that this list was updated was in 1998; data gathering is ongoing.

This stretch of the Willamette, from the Calapooia River to the Long Tom River, is on the 303(d) list (on the Internet at <http://www.deq.state.or.us/wq/WQLData/SubBasinList98.asp>) for toxics as indicated by mercury concentrations in fish tissue, and for bacteria (fecal coliform). In addition to these pollutants, there are other factors which limit the value and quality of habitat for fish. The mainstem Willamette River has lost most of its historic off-channel habitat because of agricultural practices, flood control, and road construction. Many wetlands, meanders, and other channels have been eliminated through the use of revetments and other methods to keep the river from encroaching on cultivated land. This has reduced the overall habitat complexity, which results in changes in species abundance, composition, and distribution. The Willamette River Basin Task Force report (1997) estimates that 25% of the main channel stream banks have been stabilized with rock riprap, which indicates that a large proportion of the mainstem is devoid of riparian vegetation that would contribute to the deposition of large woody debris, shade to cool the river in the summer, and benthic input. In the immediate vicinity of the project, the river runs through a broad flood plain that is in agricultural use. The condition of riparian vegetation is fair, as there are large trees and shrubs growing along the streambank in the project vicinity, but large woody debris is not present in the channel (this may be due, in part, to the hydraulics caused by winter floods).

Based on the best available information on the current status of UWR steelhead and chinook

salmon range-wide, the population status, trends, and genetics, and the poor environmental baseline conditions within the action area, NMFS concludes that the biological requirements of the identified ESUs within the action area are not currently being met. The Willamette River has degraded habitat resulting from agricultural and forestry practices, water diversions, road construction, urbanization, recreation, and flood control. The following habitat indicators are either at risk or not properly functioning within the action area: Chemical contamination/nutrients, substrate, large woody debris, off-channel habitat, pool frequency and quality, refugia, streambank condition, floodplain connectivity, peak/base flows, and disturbance history. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of UWR steelhead and UWR chinook salmon.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

The effects determination in this Opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The effects of actions are expressed in terms of the expected effect - restore, maintain, or degrade - on aquatic habitat factors in the project area.

The current status of the site is degraded because of the lack of riparian vegetation, the lack of large woody debris (instream structure), the lack of flow refugia and off-channel habitat, and the effects of existing riprap on channel morphology, water temperatures, and salmonid behavior.

The proposed action has the potential to cause the following impacts to UWR chinook and UWR steelhead, or designated critical habitat:

1. The use of riprap has the potential to change salmonid migration and rearing behavior, at least temporarily. Reduced densities of chinook salmon have been found in the vicinity of riprap-stabilized banks that do not incorporate large woody debris (Beamer and Henderson, 1998). In this instance, the barb will incorporate large woody material, and other bioengineering techniques will be used to stabilize the bank. This will reduce the effects on migrating adult fish. This area is not known to be suitable spawning habitat for either UWR steelhead or UWR chinook. This river reach is primarily a migration corridor, with some juvenile rearing. Consequently, the placement of riprap at this location may have temporary harmful effects by changing the migrating behavior of adult chinook in the interim, before the project stabilizes.
2. Any in-water work has the potential to increase erosion from the streambed, and turbidity in the river. Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Behavioral effects on fish, such as

gill flaring and feeding changes, have been observed in response to pulses of suspended sediment. Localized increases of erosion/turbidity during in-water work will likely displace UWR chinook, UWR steelhead, and other fish in the project area, and disrupt normal behavior. These effects are expected to be temporary (occurring during riprap placement) and localized.

The long-term benefits will include reduction in the amount of sediment that is entering the Willamette from the continued scouring of the revetment, and improved riparian vegetation as the plantings placed in the disturbed areas mature.

The effects of these activities on UWR chinook, UWR steelhead, and aquatic habitat will be limited by implementing construction methods and approaches, included in the project design, that are intended to avoid or minimize impacts. These include:

1. Incorporating large woody material (in the form of rootwads) to the riprap that is used to construct the barb. These rootwads will provide resting habitat for migrating salmonids and will be a source of benthic input.
2. Placing the riprap during the ODFW designated in-water work period. Since this stretch of the river is primarily used as a migration corridor for adults and juveniles, carrying out the work between July and September will ensure that no migrating fish are harmed.
3. Using only large, clean riprap will ensure that the riprap will stay in place, and not be washed downstream during high water events. Using an excavator to place the riprap, instead of end-dumping it from a truck, will limit turbidity and sedimentation.

1.5.2 Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for UWR chinook salmon and UWR steelhead consists of all waterways below naturally impassable barriers including the project area. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

The proposed actions will affect critical habitat. In the short term, a temporary increase of sediments and turbidity and disturbance of aquatic habitat is expected. In the long term, this instream barb will deflect water away from the revetment which is currently being scoured, and will prevent continuing erosion of the streambank. The NMFS does not expect that these actions will appreciably diminish the value of riverine habitat for survival of UWR chinook salmon or UWR steelhead, as this section of the river is primarily a migratory corridor.

1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area has been defined as immediate project area upstream to the edge of disturbance and extending downstream 100 feet beyond the edge of disturbance, the area estimated to be subject indirectly to turbidity and sedimentation. A wide variety of actions occur within the Willamette River basin, within which the action area is located. NMFS is not aware of any significant change in such non-federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

Future projects are planned in the Willamette River watershed. Each of these projects will be reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

1.6 Conclusion

After reviewing the current status of UWR chinook salmon and steelhead, the environmental baseline for the action area, the effects of the proposed Horning Scour Remediation Project, and the cumulative effects, it is NMFS' biological opinion that this project, as proposed, is not likely to jeopardize the continued existence of the UWR chinook salmon or UWR steelhead, and is not likely to destroy or adversely modify designated critical habitats. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it would cause minor, short-term adverse effects due to sediment/turbidity impacts and minor but long-term habitat improvement.

1.7 Reinitiation of Consultation

This concludes formal consultation on the Horning Scour Remediation Project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary. Federal agency involvement or control over the action has been retained or is authorized by law and if: 1) The amount or extent of incidental take is exceeded, 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion, 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion, or 4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

2. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing

behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1 Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of UWR chinook salmon and UWR steelhead because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during the placement of riprap in the riparian area (lethal and non-lethal). Effects of actions such as the placement of riprap are largely unquantifiable in the short term, and are not expected to be measurable as long-term harm to habitat features or by long-term harm to steelhead or chinook salmon behavior or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information in the biological assessment, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Opinion. The extent of the take includes the river and associated riparian habitat in the area of riprap placement on the streambed and streambank of the Willamette River, extending upstream to the edge of disturbance, and extending downstream 100 feet.

2.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimizing take of the above species:

1. To minimize the amount and extent of incidental take from riprap placement in the Willamette River channel, measures shall be taken to limit the extent of rock placement in the channel, to design the work so that harmful effects to channel morphology are minimized, and to schedule such work when the fewest number of fish are expected to be present.
2. To minimize the amount and extent of incidental take from staging the construction

activities from the streambank, effective pollution control measures shall be developed and implemented to minimize the potential for fuel spills and other contamination into and within the river.

3. To minimize the amount and extent of take from loss of instream habitat and to minimize impacts to critical habitat, measures shall be taken to avoid impacts to riparian and instream habitat, or where impacts are unavoidable, to mitigate for the loss of instream habitat by restoring riparian function.
4. To ensure this prescribed conservation measures are effective in minimizing the likelihood of take from permitted activities and that the proposed mitigation actions are performing adequately, a monitoring and evaluation report will be submitted to the USACE and NMFS.

2.3 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the USACE and applicant must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure #1 (riprap placement), the USACE shall require completion of the following:
 - a. All work will be done within the time recommended by the ODFW district biologist and watershed manager, and outside of the timing of UWR chinook salmon and UWR steelhead migration.
 - b. All work will be staged from the streambank, with all equipment operating from a base that is above the ordinary high water mark. Equipment entry into the active flowing channel will be limited to use of boats (for safety purposes and to monitor the placement of riprap) and the arm of the heavy equipment that will be used to place the riprap.
 - c. Containment measures adequate to prevent construction materials from entering any waterway shall be implemented.
 - d. Riprap will be placed individually and not end-dumped.
 - e. Barb design. Barbs will be designed as follows:
 - (1) No part of the barb structure will exceed bankfull elevation, including all rock buried in the bank key. The trench excavated for the bank key will be filled above bankfull elevation with soil and topped with vegetation.
 - (2) Maximum barb length will not exceed 1/4 of the bankfull channel

- width.
- (3) If two or more barbs are built in a series, the barb farthest upstream will be placed within 150-feet or 2.5 bankfull channel widths, whichever is less, from the barb farthest downstream.
 - (4) Rock will be individually placed without end dumping.
 - (5) Woody riparian planting will be included as a project component.
- ii. Class 350 metric or larger rock is preferred unless it will constrict the channel migration zone.
 - iii. Wood placed as a component of streambank protection projects will be large, intact, hard, and undecayed to partly decaying with untrimmed root wads to provide functional refugia habitat for fish. Fragmented wood that is decayed and laying on the ground or partially sunken in the ground is not acceptable.
- f. Supporting analysis: Streambank protection. The USACE will ensure that any streambank protection method authorized pursuant to a permit issued under this Opinion is selected from options identified using the three matrices based on mechanism of failure, reach conditions, and habitat impacts described in the *Aquatic Habitat Guidelines for Integrated Streambank Protection* (WDFW et al. 2000).¹
2. To implement Reasonable and Prudent Measure #2 (pollution control measures), there will be pollution control measures that include the following:
- a. Vehicle maintenance, re-fueling of vehicles and storage of fuel, except for that needed to service the boats, shall be done at least 150 feet from the 2-year flood elevation, or in an adequate fueling containment area to be approved by NMFS or by the USACE. The equipment and vehicles staging activities from the streambank will be limited to the vehicles needed to deliver riprap and place it in the water. All other staging will occur at least 150 feet from the 2-year floodplain.
 - c. At the end of each work shift, vehicles shall be stored greater than 150 feet (horizontal distance) from the 2-year flood elevation. This does not apply to the boats and the heavy equipment used to place the riprap.
 - d. Adequate fuel spill containment measures for any boats used during construction will be implemented.

¹ WDFW (Washington Department of Fish and Wildlife), Washington Department of Transportation, Washington Department of Ecology, and the U.S. Army Corps of Engineers, *Integrated Streambank Protection Guidelines*, various pagination (Draft)(October 30, 2000)(guidance on ecological approach to management of eroding streambanks) (<http://www.wa.gov/wdfw/hab/ahg/ispdoc.htm>). Chapter 5, pages 5-4 through 5-7 describe the process of selecting bank protection methods using the screening matrices; pages 5-7 through 5-19 provide additional information to support the choice of techniques.

3. To implement Reasonable and Prudent Measure #3 (minimization of habitat loss), the USACE shall operate under the following guidelines:
 - a. Conservation goal. The conservation goal of streambank protection activities authorized under this permit is to provide the greatest degree of natural habitat function that is economically achievable through the application of an ecological approach to bank protection and the best available bioengineering² practices, technologies, processes, siting criteria, operating methods, or other alternatives.
 - b. Only clean riprap, of a size adequate to ensure stability of the repair, will be used to complete the scour repair project, and no more than 500 cubic yards of rock will be placed.
 - c. The USACE and applicants will compensate for the loss of instream habitat by restoring riparian functions along the streambank where the work will be staged.
4. To implement Reasonable and Prudent Measure #4 (monitoring and reporting), the USACE shall ensure that:
 - a. Within 90 days of completing the project, the USACE will submit a monitoring report to NMFS describing the success meeting their permit conditions. This report will consist of the following information:
 - i. Project identification. Name, OHB number, and USACE permit number.
 - ii. Starting and ending dates of work completed for this project; and
 - iii. The USACE contact person.
 - iv. Pollution and erosion control. Upon request, a summary of pollution and erosion control compliance, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials shall be provided.
 - v. A narrative assessment of the project's effects on natural stream function.
 - vi. Photographic documentation of environmental conditions at the project site and compensatory mitigation site(s) before, during and after project

² "Bioengineering" means the use of live and dead plant materials to stabilize hill slopes, streambanks or shorelines. Examples include facines, bundles, logs, root wads that are often used with soil or other hard structures such as rocks, boulders or wood crib structures.

completion.

1. Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
2. Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
3. Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. All monitoring reports shall be submitted to:

National Marine Fisheries Service
Oregon Habitat Branch, Habitat Conservation Division
Attn: OSB-2000-0043
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

3. ESSENTIAL FISH HABITAT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH.
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Actions

The proposed action is detailed above, in section 2 of this Opinion. The proposed action area includes the mainstem Willamette River, from the immediate vicinity of the scour repair extending downstream the entire width of the river for a distance of 100 feet. The proposed action area encompasses the Council-designated EFH for chinook (*Onchorhynchus tshawytscha*) and for coho (*Onchorhynchus kisutch*) salmon. A description and identification of EFH for salmon is found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of the impacts to these species' EFH from the above proposed USACE action is based on this information.

3.5 Effects of the Proposed Action

As described in detail in Section 1.5, the proposed activities may result in detrimental short-term adverse effects, but long-term improvements to certain habitat parameters. These impacts include: the release of sediment during the placement of rock for the construction of the barb, disturbance to the existing riparian habitat on the streambank above the location of the scour repair site, and minor changes to the hydraulic regime of the channel. The long-term improvement in habitat will occur because the continued scouring of the revetment will be eliminated, and the **incorporation of large woody material in the structure of the barb will provide benefits for rearing salmonids.**

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for **Pacific salmon.**

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the USACE and all of the Reasonable and Prudent Measures and the Terms and Conditions contained in Sections 2.2 and 2.3 are applicable to salmon EFH. Therefore, NMFS incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NMFS after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NMFS, the agency must explain its reasons for not following the recommendation.

3.9 Consultation Renewal

The USACE must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

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